

## **Distinguished Guest Lecture**

### **Reinforcing the CTBT in Northeast Asia: Benefits, Opportunities, and Risks**

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#### **Introduction**

I wish to express my deep appreciation for the invitation to deliver a Distinguished Guest Lecture at the Korean National Assembly on “Reinforcing the CTBT in Northeast Asia: Challenges, Opportunities, and Risks”.

It is indeed a special honour to address the distinguished representatives of the people of the Republic of Korea gathered here, as well as the expert community and representatives from the media who are present today. Addressing the challenge of the proliferation of nuclear weapons and other weapons of mass destruction requires that we explore every opportunity to advance our common goals. It also requires that we utilize the tools, mechanisms, and institutions at hand to address and reduce nuclear threats at every turn.

Since its opening for signature, the CTBT has contributed in myriad ways to advancing regional and international peace and security. I also firmly believe that the verification tools, technologies and techniques that have been developed over the years by the CTBTO – thanks to the strong support of its Member States – have the potential to contribute in many aspects of verifying the denuclearization of the Korean peninsula.

While making progress on this extremely important objective has been an exceptionally daunting task, it is essential that we not miss the historic opportunities that have been unfolding in recent months. By reinforcing the CTBT in Northeast Asia, we not only have the opportunity to advance a diplomatic solution to one of the world’s most intractable conflicts, but also strengthen the non-testing norm that has contributed to global security and stability.

Today, I will focus my remarks on the benefits of the CTBT for regional and international security and stability, the opportunities presented by the ongoing diplomatic engagement with the DPRK, and finally, the risks of inaction.

#### **Impact of the CTBT on regional and international security and stability;**

After decades of determined, but unsuccessful, efforts to put into place a legally binding and verifiable prohibition on nuclear testing, the end of Cold War provided a window of opportunity for the CTBT become a reality. Contributing to both non-proliferation and disarmament objectives, the Treaty was in fact one of the key decisions that paved the way for the indefinite extension of the Nuclear Non-Proliferation Treaty in 1995.

The CTBT is a pillar of the non-proliferation regime, and contributes to international peace and security by placing a significant roadblock to the further spread of nuclear weapons. It also constitutes a firm technical barrier against the development of advanced nuclear weapon designs.

While geopolitical tensions and regional strife continue to present difficult challenges for the international community, the common ground that we can and should agree on is that the world can ill afford a return to a time of unchecked and unrestrained nuclear explosive testing.

The CTBT, one of the oldest items on the arms control agenda, has solidified the de facto international norm against testing since its opening for signature in 1996. There are 183 States that have signed the Treaty, of which 166 have ratified. This is an impressive record of universalization for any multilaterally negotiated legal instrument, and particularly so for one related to arms control and international security.

This norm remains entrenched and continues to guide international diplomacy in the security field. This is exemplified in the forceful condemnation of every nuclear test that has been carried out since the Treaty was adopted by the General Assembly – most notably the nuclear tests carried out by the DPRK, the only country to conduct a nuclear test this century.

The value of the CTBT is underpinned by its science-based verification system capable of monitoring for and detecting nuclear explosions. This successful and proven verification regime, and the benefits it brings to Member States, has further entrenched the global norm.

The International Monitoring System (IMS), which is made up of 337 facilities worldwide, is over 90 per cent complete. This is a system with truly global reach, supported by an International Data Centre (IDC) in Vienna that, through a global satellite system, processes and analyses data non-stop. This data is shared with 1,300 institutions and over 130 countries throughout the world.

Because of the CTBT, we have transitioned from a world in which the nuclear armed States were carrying out nuclear tests with near impunity. At the height of the Cold War, there were about 500 nuclear tests carried out each decade, resulting in the development of more powerful and deadly weapons that could be delivered anywhere in the world with incredible speed and precision.

The nuclear test was the fuel that powered the nuclear arms race between the two Cold War superpowers, with the other NPT-denominated nuclear weapon States advancing apace with their own nuclear weapons programmes. This created an increasingly dangerous instability in the international environment, which put in jeopardy the peace and security of the entire world.

With one important exception, the CTBT for more than twenty years has brought this dangerous legacy of the Cold War to a complete stop. It has created a forum for technical cooperation and collaboration on nuclear test monitoring that has built trust and confidence among its Member States.

The performance of the CTBT verification regime has demonstrated that no State can confidently conduct a clandestine nuclear test explosion in violation of the Treaty without detection.

Moreover, there have been countless examples of how nuclear test monitoring technologies and data can be utilized for civil, scientific and industrial applications. These benefits of the Treaty outside of

it's core mandate include disaster risk reduction, climate change studies, tsunami warning, and countless others.

While still not in force due to the CTBT's stringent entry into force provisions, the Treaty has been an overwhelming success in both brining nuclear tests to a virtual standstill and establishing a credible monitoring system that provides effective verification of the prohibition on nuclear tests.

But what does that mean in practical terms?

In 2006, the DPRK conducted its first nuclear test. This was not just the first test of a nuclear device by the DPRK, it was also the first real life test of the CTBT verification regime. As you are all aware, this was also the first and only time a State that had been a party to the NPT developed a nuclear weapons capability.

The explosion was detected by 22 IMS stations and was estimated by many experts to be below a one kiloton TNT equivalent yield. Why is this important?

When technical experts were devising the parameters for the CTBT verification regime, they aimed at a global detection capability threshold of 1 kiloton. This meant that with even less than 60% of the IMS in place, the system was working better than many thought possible when the entire network was complete.

The history of nuclear negotiations with the DPRK is replete with short lived diplomatic successes that quickly turned into failures and reignited crises. The breakdown of the Six Party Talks and the Leap Day agreement are but two examples. These too often led to provocations, aggression and increasingly robust nuclear and ballistic missile test programmes.

Most recently, on 3 September 2017, the IMS detected a suspicious event in the vicinity of the DPRK nuclear test site. An unprecedented 134 IMS stations would eventually be used in the detection, and for the first time both infrasound and hydroacoustic signals could be associated with the event.

While no radionuclide data was detected that could be directly associated with the event, as had been the case in 2006 and 2013, this was likely due to the increasing sophistication of the DPRK nuclear weapons testing programme, particularly in the areas of tunnelling and containment.

For this latest and hopefully last test, experts would estimate that the yield was anywhere between 100 to 250 kilotons. To be sure, the 2017 nuclear test was wake up call to the international community that the DPRK nuclear weapons programme had reached a level of technical sophistication that few had anticipated.

The DPRK nuclear weapons programme had proven to not only pose a threat to regional and international security and the nuclear non-proliferation regime, but also a direct challenge to the non-testing norm that had only been violated by one country this century.

This is why I have always maintained that engagement with North Korea should be a top priority. I very much welcome the rapprochement between the DPRK and the Republic of Korea. The summit meeting between President Trump and Chairman Kim and the actions and ongoing talks that have taken place since have thus far been positive.

## **Opportunities presented by the ongoing diplomatic engagement with the DPRK**

Taken together, these developments have opened a window of opportunity that we must be ready to act upon.

What then are the technical contributions that the CTBTO could provide that could help with the ongoing process to verifiably dismantle the DPRK nuclear weapons programme?

I will briefly address both the technologies and expertise that would be relevant to verifying the closure of the Punggye Ri nuclear test site, as well as the monitoring assets that could be utilized to verify any nuclear test related commitment as part of a broader denuclearization agreement.

While many here today, as well as within the international expert community, will continue to debate the proper sequencing or technical specifications of any denuclearization process with the DPRK, it is vital to understand that in every possible scenario the CTBT and its verification technologies have much to contribute.

Firstly, what do we know about the activities undertaken to close the DPRK nuclear test site? The unfortunate reality is that we do not know very much.

Although there was initial talk of inviting technical experts from the United States and the Republic of Korea to witness the closing of the site, in the end only international journalists were there to observe the event. More troubling are the reports that some facilities may still remain at the site intact, and that specialized equipment may have been removed from the site beforehand.

While the closure of the site is welcome, those who were present possessed neither the equipment nor technical the knowhow to adequately assess the activities undertaken to dismantle the site.

They were not geophysicists who could analyse local seismic data. Nor were they experts in areas such as multi-spectral imaging, gamma radiation monitoring, environmental sampling, ground-penetrating radar, or any of the other techniques relevant for in-filed data collection.

These technologies could have been utilized to provide site characterization prior to the closure activities to assess the state of the site. But they can also be used now to provide a reference point for future monitoring as part of post-site closure and dismantlement verification.

For now, I believe the DPRK missed out on an opportunity to provide additional confidence in their stated intention to work towards the complete denuclearization of the Korean peninsula.

However, the CTBTO stands ready to make available these monitoring assets and expertise as part of any process to provide reliable verification of the irreversible dismantlement of the test site. Now some have questioned exactly what irreversible would mean in this context, and whether any action would be truly irreversible. A useful description of this term that I have heard in this context is that it would be more costly to reopen or reconstitute a facility than it would be to create an entirely new one.

Secretary of State Mike Pompeo told reporters in Seoul that he was "confident" that the DPRK understood there would need to be in-depth verification of the dismantling of its nuclear program, which would naturally include the test site.

The capabilities that have been developed by the CTBTO through the sustained investments and technical contributions by our Member States over the last two decades can be mobilized to support these verification efforts with efficiency and cost-effectiveness. We have the in-house expertise and equipment ready to deploy should our Member States call upon us.

Otherwise, the international community would be left wondering whether the tunnels, equipment, and other related infrastructure could be reconstituted with little delay should negotiations come to a halt or an agreement break down.

Given the relative ease at which the DPRK could allow access to Punggye Ri to conduct test site closure verification, it is not surprising that some analysts have concluded that the CTBT offers the best prospects for quickly and verifiably rolling back elements of the DPRK nuclear weapons programme.

However, this is not the only denuclearization goal where the CTBT and its monitoring capabilities would be relevant.

Any agreement that would achieve the denuclearization of the Korean peninsula must contain guarantees against conducting nuclear tests. The CTBTO and its verification regime can be explicitly called upon to verify this aspect of an agreement.

Even while the political circumstances surrounding the CTBT remain challenging, there is no doubt about the organization's technical capabilities to provide effective verification of a nuclear test ban.

The CTBTO is the only organization with the proven competencies and capabilities to provide adequate verification to monitor an end to nuclear tests in North Korea. We have developed and refined our remote monitoring via the International Monitoring System, and have at our disposal state of the art processing and analysis capabilities within the International Data Centre.

Chairman Kim has already initiated a suspension of the DPRK nuclear testing programme and has indicated a willingness to join international efforts to ban nuclear tests. While this verbal commitment is a welcome sign, there should also be serious consideration of signature of the CTBT as a concrete step toward a long term solution.

Matching the United States by signing the CTBT would be a forceful indication of the willingness of the DPRK to move towards verifiable denuclearization with little to no downside.

## **Conclusion**

While we must not be naïve about the extent of the challenge, we have been presented with a clear opening to bring the DPRK into the CTBT orbit. This is perhaps the best chance that we may ever have. Whether through the verification of the closure of its test site, agreeing to IMS monitoring as part of a non-testing guarantee, or by formally signing and eventually ratifying the Treaty, this opportunity must not be lost.

The situation we see today may best be described as a litmus test moment for the international community. The DPRK has been the top concern with regards to nuclear testing over the last 12 years. If the CTBT and its verification capabilities are not considered relevant for providing a verifiable stop of nuclear testing in the DPRK, then when will they be?

The CTBT faces a distinct and potentially devastating challenge. The previously mentioned entry into force provisions require that 44 States that were nuclear capable at the time of the CTBT's negotiation ratify the Treaty for it to become legally binding international law. As a result, there are eight remaining States that must ratify: China, the DPRK, Egypt, India, Iran, Israel, Pakistan, and the United States.

Because of this political challenge, we find ourselves in an unprecedented situation. We have built a global verification regime that has been proven time and time again capable of meeting the verification requirements of the CTBT. The Treaty enjoys near universal support in the international community.

I sometimes wonder whether we have become a victim of our success. The DPRK is the sole outlier of the non-testing norm, and any questions on the credibility of the verification regime and its detection capabilities have been dismissed.

However, as long as the Treaty remains not in force, the non-test norm and the global alarm system that has been established over the past two decades remain at risk.

To put it in even more stark terms, if the CTBT fails, then the entire nuclear non-proliferation and disarmament framework that has greatly reduced nuclear threats in the world would be put in jeopardy.

It is crucial that we all work together to ensure that this does not happen. The credibility and vitality of the non-proliferation and disarmament regime depends on it.

Thank you.